

CLAIMS:

1. A closure suitable for mounting onto a container, the container having an end portion defining a container opening, the closure comprising:
- 5 a main closure having:
- a top portion having an aperture therethrough;
 - a skirt portion depending downwardly from the top portion that is attachable to the container end portion;
 - 10 a sealing rib that, on attachment of the main closure to a container, forms a seal with the end portion of the container;
 - a spout extending upwardly from the top portion, the spout defining a bore that is in fluid communication with the aperture in the top portion, an outer surface of the spout having at least one outwardly extending
 - 15 protuberance thereon; and
 - a plug member having a radially outer surface and mounted to the spout; and
- a top cap mounted to the spout, the top cap having an upper portion that
- 20 has an inner surface defining an opening through the upper portion, the opening being in fluid communication with the bore of the spout, a skirt portion depending downwardly from the upper portion, and a sealing member extending inwardly from an inside surface of the top cap;
- 25 the top cap being relatively movable between a first position where the plug member is at least partially within the opening and the sealing member forms a seal with the outer surface of the spout and at least a second position where the plug member is withdrawn from the opening; and
- 30 wherein on relative movement of the top cap from said first position towards said second position, the sealing member rides up over said at least one protuberance so as to at least partially release the seal made by the sealing member with said spout.
- 35 2. The closure of claim 1 wherein the outer surface of the spout has a plurality of outwardly extending protuberances thereon.

3. The closure of claim 2 wherein between about 10 and 30 protuberances extend outwardly from the outer surface of the spout.
- 5 4. The closure of claim 3 wherein between about 15 and 20 protuberances, more preferably 18 protuberances, extend outwardly from the outer surface of the spout.
5. The closure of claim 2 wherein the protuberances are circumferentially
10 disposed on the outer surface of the spout.
6. The closure of claim 5 wherein the protuberances are equally spaced on the outer surface of the spout.
- 15 7. The closure of claim 1 wherein the skirt portion of the top cap is substantially cylindrical.
8. The closure of claim 7 wherein the sealing rib comprises an annular sealing rib that on mounting of the top cap to the spout in said first position
20 seals with the outer surface of the spout below the protuberances thereon, the annular sealing rib including a first portion which is contiguous with an inner surface of the skirt portion of the top cap and at least a second portion contiguous with the first portion, the second portion, prior to mounting of the top cap to the spout, extending radially inwardly to a circular free edge.
- 25 9. The closure of claim 8 wherein the second portion extends inwardly and downwardly to the circular free edge.
10. The closure of claim 8 wherein on mounting of the top cap to the spout,
30 the second portion is folded back at least towards the first portion.
11. The closure of claim 10 wherein the second portion is folded back against the first portion on mounting of the top cap to the spout.
- 35 12. The closure of claim 9 wherein the second portion of the sealing rib is frusto-conical.

13. The closure of claim 7 wherein the sealing member comprises a sealing rib that, prior to mounting of the top cap to the spout, extends inwardly from an inner surface of the top cap to a circular edge.
- 5
14. The closure of claim 13 wherein the sealing rib extends inwardly and downwardly to a circular free edge from the inner surface of the top cap.
15. The closure of claim 13 wherein on mounting of the top cap to the spout,
10 the sealing rib is folded back at least towards the inner surface of the top cap.
16. The closure of claim 15 wherein the sealing rib is folded back against the inner surface of the top cap.
- 15 17. The closure of claim 14 wherein the sealing rib is frusto-conical.
18. The closure of claim 7 wherein the sealing member comprises an annular contact bead that on mounting of the top cap to the spout in said first position seals with the outer surface of the spout below the protuberances
20 thereon.
19. The closure of claim 1 wherein, prior to the plug member firstly entering the opening in the upper portion of the top cap, an annular sealing rib extends inwardly from the upper portion at least partially across the opening to a free
25 edge, the inner surface of the opening having an internal diameter relative to the external diameter of the plug member such that when the plug member firstly enters the opening, at least a portion of the sealing rib is engaged by the plug member and folded back towards the inner surface of the opening to form a seal between at least the outer surface of the plug member and the top cap.
- 30
20. The closure of claim 19 wherein the inner surface of the opening in the upper portion of the top cap is substantially cylindrical and extends from an upper side to an underside of the upper portion.

21. The closure of claim 20 wherein the annular sealing rib, prior to the plug member firstly entering the opening in the upper portion of the top cap, has at least a frusto-conical portion extending radially inwardly to a circular free edge.
- 5 22. The closure of claim 1 wherein the inside surface of the skirt portion of the top cap has an attachment mechanism complementary to an attachment mechanism on an external surface of the spout.
23. The closure of claim 22 wherein the complementary attachment
10 mechanisms comprises a thread adapted to engage a corresponding thread on the external surface of the spout.
24. The closure of claim 1 wherein the plug member is located at or adjacent an end of the spout distal said opening, with an aperture between the plug
15 member and the spout wall, the aperture being spanned by a plurality of bridge members that extend radially inwardly and upwardly from the spout to support the plug member.
25. The closure of claim 1 wherein the sealing rib of the main closure
20 comprises an annular sealing rib adapted to seal with the end portion of the container, the sealing rib projecting downwardly from an underside of the top portion and including a first portion which is contiguous with the top portion and has an inner surface, which inner surface lies radially inwardly of the skirt portion, and at least a second portion contiguous with the first portion and
25 separated from the top portion by the inner surface of the first portion, the second portion extending at least radially inwardly to a circular edge, the inner surface of the first portion having an internal diameter relative to the external diameter of the end portion of the container to which the main closure is to be attached such that during attachment of the main closure with the end portion
30 of the container, the sealing rib will be engaged by the end portion of the container so folding the second portion at least towards the inner surface of the first portion of the rib to form a seal between at least an outer surface of the end portion of the container and the main closure.
- 35 26. A closure suitable for mounting onto a container, the container having an end portion defining a container opening, the closure comprising:

a top portion having an aperture therethrough;

a skirt portion depending downwardly from the top portion that is attachable to the container end portion;

a spout extending upwardly from the top portion, the spout defining a
5 bore that is in fluid communication with the aperture in the top portion, an outer surface of the spout having at least one outwardly extending protuberance thereon;

a plug member having a radially outer surface and mounted to the spout;
and

10 a sealing rib that, on attachment of the closure to a container, forms a seal with the end portion of the container, the sealing rib comprising an annular sealing rib adapted to seal with the end portion of the container, the sealing rib projecting downwardly from an underside of the top portion and including a first portion which is contiguous with the top portion and has an inner surface, which
15 inner surface lies radially inwardly of the skirt portion, and at least a second portion contiguous with the first portion and separated from the top portion by the inner surface of the first portion, the second portion extending radially inwardly to a circular edge, the inner surface of the first portion having an internal diameter relative to the external diameter of the end portion of the
20 container to which the closure is to be attached such that during attachment of the closure with the end portion of the container, the sealing rib will be engaged by the end portion of the container so folding the second portion at least towards the inner surface of the first portion of the rib to form a seal between at least an outer surface of the end portion of the container and the closure.

25
27. The closure of claim 26 wherein the outer surface of the spout has a plurality of outwardly extending protuberances thereon.

28. The closure of claim 27 wherein between about 10 and 30 protuberances
30 extend outwardly from the outer surface of the spout.

29. The closure of claim 28 wherein between about 15 and 20 protuberances, more preferably 18 protuberances, extend outwardly from the outer surface of the spout.

30. The closure of claim 27 wherein the protuberances are circumferentially disposed on the outer surface of the spout.
31. The closure of claim 30 wherein the protuberances are equally spaced
5 on the outer surface of the spout.
32. A container sealed by a closure as defined in claim 1.
33. A container sealed by a closure as defined in claim 27.
10
34. A method of sealing a container comprising the step of mounting a closure according to claim 1 to the neck of the container.
35. A method of sealing a container comprising the step of mounting a
15 closure according to claim 27 to the neck of the container.
36. A mould for forming a main closure as defined in claim 1.
37. A mould for forming a main closure as defined in claim 27.
20